CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)

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Project Number

38028

Project Title

The Effect of Almond Byproducts on the Germination, Establishment, and Growth of Tall Fescue Grass Seed

Abstract

Objectives/Goals

My project's objective is to determine if almond byproducts can be used as an effective soil amendment. I studied the growth of tall fescue grass seed to determine if the addition of almond hulls, shells, and/or almond dust to the soil would improve the germination, establishment, and growth of the grass.

Methods/Materials

Three almond byproducts were used in my experiment: hulls, shells, and dust. For each growth sample, I planted the same amount of tall fescue grass seed into 3 cups of soil or 2 1/2 cup soil, 1/2 cup byproduct mixture. I conducted two separate trials of my experiment. The samples were placed under a grow light for 10 hours each day and watered the same amount at the same time. The germination date was recorded for each sample. Throughout the 8 week experiment, I measured and recorded the five tallest grass blades of each sample, as well as observed the overall health of each sample.

At the conclusion of my experiment, I wondered what would happen to the grass samples if I stopped watering them and removed them from the grow light. I began a supplemental experiment. On January 23rd I removed the grow light and stopped watering the growth samples. For the next 4 weeks, I observed the samples.

Results

The growth samples with the shells and dust had the fastest germination time of 5 days, compared to 6 days for the control sample. After 8 weeks of growth, the shell sample resulted in the greatest average growth with an average blade length of 18.37 centimeters. The second two almond byproduct samples also showed a greater average growth compared with the control sample. The hull sample#s average blade length was 18.16 centimeters, and the dust sample#s was 16.70 centimeters, while the control sample#s average blade length was 16.56 centimeters at the end of the experiment.

Conclusions/Discussion

The use of almond byproducts as a soil amendment improved the germination, establishment, and growth of tall fescue grass. Compared to the control sample, the samples with almond byproducts resulted in a shorter germination period, increased grass blade length, and an overall healthier appearance.

For my supplemental experiment, after four weeks of no grow light or water, the samples with the hulls and dust showed impressive endurance, and were markedly healthier than the control sample. These byproduct samples were still thriving, whereas the control sample was almost completely dead.

Summary Statement

My project shows that the almond byproducts- hulls, shells, and dust- can be used as a soil amendment to improve the germination, establishment, and growth of tall fescue grass seed.

Help Received

My dad helped me obtain the almond byproduct samples, and my mom taught me how to use Excel for my result tables and graphs.